26 October 2011

ENERGY STAR Displays Specification Draft 2
Comments from the European Commission

We provide in the following comments from the European Commission on the ENERGY STAR Program Requirements – Product Specification for Displays – Eligibility Criteria – Draft 2 Version 6.0.

We comment specifically on topics that were brought up at the stakeholder meeting on 27 September 2011 in Washington DC and on one additional topic. The comments are additional to the comments we provided on draft 1.

Scope definitions

We previously noted that the definition for signage displays may be limited by the description of the venues where the signage displays will be used. We would suggest an amendment to the definition to read:

"Signage Displays: An electronic device with a display screen that is typically marketed as signage for use in retail and department stores, restaurants, museums, hotels, outdoor venues, airports, conference rooms, education markets and similar venues where the displays are intended to be viewed by multiple people in non-desk based environments."

Sleep mode definitions

We agree that the definition should be slightly edited in order to be more precise. The most important change is to include data and network connections in bullet a.

We suggest the following edits to the definition:

"The power mode in which the product is connected to a mains power source, has been activated, but is not providing one or more of its principal functions, is not producing sound or picture and is not transmitting or receiving program information. The product offers one or more of the following user-oriented or protective functions, which may persist for an indefinite time:
a) facilitating the activation or deactivation of other modes (including On Mode) via an occupancy sensor, remote control, data or network connections or internal timer;
b) continuous function: information or status displays including clocks; or,
c) continuous function: sensor-based functions."

Ultra thin clients

We believe that the combination of a display and an ultra thin client is closer to the definition of an integrated computer of the computer specification and therefore belongs to that specification. Even though the ultra thin client has not an operating system installed, it is our understanding that the OS software will be session based installed on the device and after that the device will function as a thin client.

However, it is not a main point for us as long as there is no additional power allowance for this kind of devices and the definition clearly distinguishes displays with ultra thin clients and integrated thin clients.

High performance displays

We agree that it is important to be able to qualify high performance displays because the professional market requires them and because part of the consumer market is moving towards these display types. Tablets are also moving to high performance displays e.g. iPad, ASUS Eee Pad Transformer and Lenovo ThinkPad Tablet are all using IPS panels. A larger market demand for these panel types will probably also support a development towards more efficient high performance displays.

We recommend assessing a possible need for additional power allowance in the qualification equations looking at all panel types for high performance displays including the plane-to-line switching (PLS) technology. This technology appears to offer the same functional characteristics of other high performance displays with less power demand.

The condition for an additional power allowance is that the definition is technology neutral and that the power allowance is set at a level maintaining the 25 percent qualification level for the high performance displays.

On mode equations

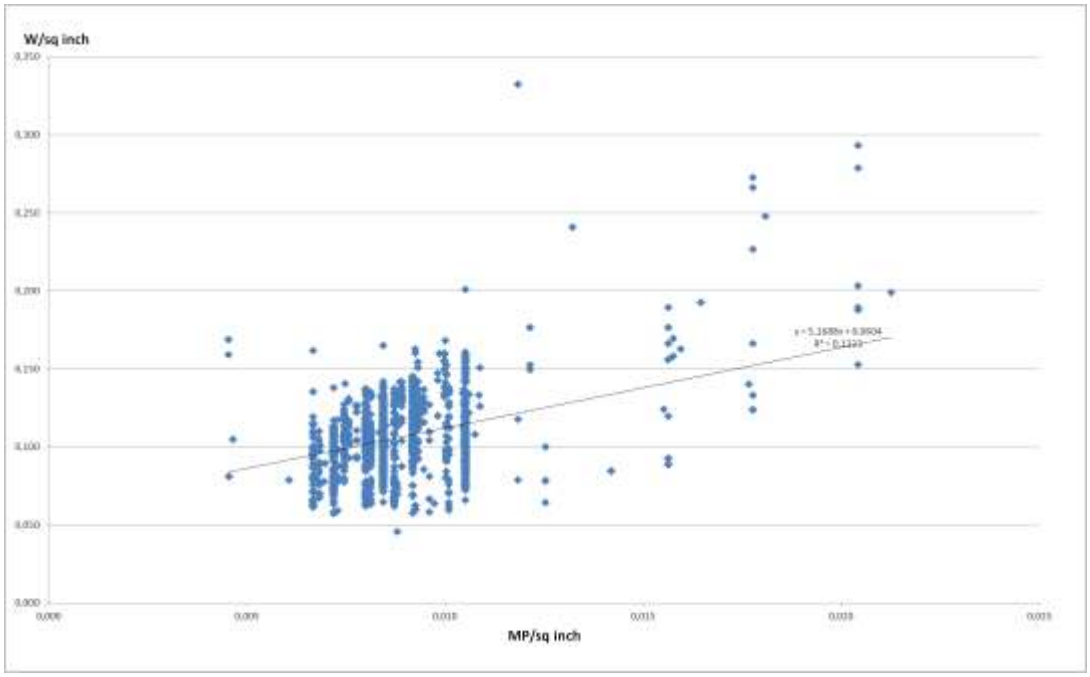
We have looked more into the topic on the on mode equations especially regarding including the resolution as a parameter additionally to the area.

First of all, it is important to consider if resolution is a quality parameter that the customer will prioritise when buying a display. We believe that the size is the main selection parameter for the main part of the customers followed by the resolution.

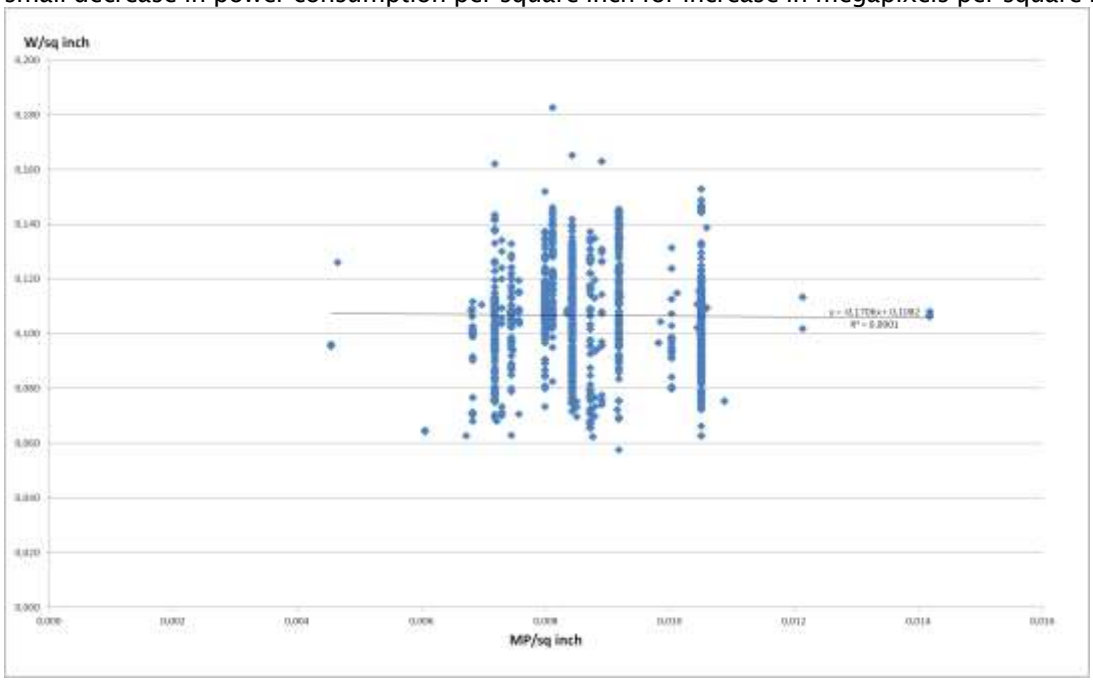
Technically when looking at LCD backlit panels, higher resolution typically requires higher power consumption due to a need for more powerful and power consuming electronics and due to a need for higher backlighting intensity for the same luminance.

The question is if this is seen in practice. In the following charts, we show watt per square inch versus megapixels per square inch for displays in the EU database. This will show the influence of the resolution on the power consumption.

The first chart shows all the displays below 30" (2932 units). There is a clear increase in power consumption per square inch for increasing megapixels per square inch.



However when looking only at typical computer monitor sizes between 18" and 24" (2553 units), there is a small decrease in power consumption per square inch for increase in megapixels per square inch.



Based on the data analysis it seems difficult to include the resolution in the equation for the main computer monitor sizes. However, resolution might still be included in order to have a common base equation for all sizes below 30", but with less impact on the power level.

Below is an example on the impact on power consumption when doubling resolution and area, respectively. E.eg. when doubling resolution for displays between 12" and 25", the allowed power consumption increases with 60 %. When doubling the area, the allowed power consumption increases with 16 %.

Size	Double resolution	Double area
< 12	36 %	23 %
12–25	60 %	16 %
25–30	46 %	199 %

We recommend reducing the factor 6 watt per megapixel substantially. This is especially important given the fact that manufacturers appear to be reducing the price of high definition displays and large increases in energy use could occur if too much allowance is given to the resolution of displays.

Bin sizes

As an example of the computer monitor market, we show below a table of computer monitors on the Danish market offered at a leading price portal (www.edbpriser.dk). We have divided into what we believe are common size bins based on the number of products and type of products. The table does not include picture frames.

Size, inch	Number of products	Usage
< 15	51	Special purpose small monitors
> 15, < 18	88	Outdated computer monitors and special purpose monitors
> 18, < 22	436	Computer monitors common size
>22, < 24	285	Computer monitors large size
> 24, < 30	88	Computer monitors very large size

If the size bins should reflect the usage of the displays, we believe that the following bins correspond better to common usage today and in near future.

Size, inch	Usage
$\leq$ 12	Picture frames
> 12, < 18	Outdated computer monitors and special purpose monitors
$\geq$ 18, < 30	Common computer monitors
>30, $\leq$ 60	Signage products

Data and network connectivity

Wake up of the display through standard data connectivity should not be allowed additional sleep power consumption. About 66 % of the products in the EU database comply with the 0.5 W limit. We believe that the development goes towards lower sleep levels and more products in future will be able to comply.

When it comes to network connectivity typically through Ethernet hardwired or WiFi the development is also towards lower consumption levels. However, for the couple of years, it will be difficult to comply with the sleep mode level of 0.5 W. We suggest an adder for network connectivity in sleep of 0.5–1 W.

Power management

We agree in the proposals in draft 2 section 3.2.2. We recommend adding a requirement of default time to sleep of e.g. one hour unless appropriate for the intended use of the products, which mainly concerns public information signage displays.

Computer monitors are a special case because many of them will not power down if unplugged from a notebook computer, which is a typical scenario in many office environments unless they are using docking stations. We recommend treating them separately by having a requirement of powering down as soon as they are unplugged from the computer or at least with the default delay time for power down by the computer according to the computer specification i.e. 15 minutes.

Additional Comment

Line 221 – Low-voltage DC powered products: We understand from the formula that the DC power products should comply by their DC consumptions. We believe that these products eventually will be powered by electricity from the AC grids and that there will be a conversion loss involved in providing the DC power. Therefore, we recommend using a standard conversion efficiency, when calculating the Pon. Else the comparison with the AC powered product would not be fair.

The conversion efficiency could follow the EU Ecodesign requirements e.g. 0.87 corresponding to P larger than 51 W.